

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

STREAM HABITAT IMPROVEMENT AND MANAGEMENT

(Ac.)

CODE 395

DEFINITION

Maintain, improve or restore physical, chemical and biological functions of a stream, and its associated riparian zone, necessary for meeting the life history requirements of desired aquatic species.

[Stream Visual Assessment Protocol](#) or comparable evaluation tool.

- when applied, result in a conservation system that meets or exceeds the minimum quality criteria for stream habitat established in Section III of the electronic Field Office Technical Guide ([eFOTG](#)).

PURPOSE

1. Provide suitable habitat for desired aquatic species.
2. Provide stream channel and associated riparian conditions that maintain ecological processes and connections of diverse stream habitat types important to aquatic species.

Manage adjoining riparian areas to support age-class and species diversity of riparian-wetland vegetation suitable for the site conditions and desired ecological benefits. Such benefits may include stream temperature moderation, recruitment of instream large wood and fine organic matter, input of riparian nutrients and terrestrial insects, dynamic channel stability, enhanced ecologic and hydrologic floodplain function, and filtration of contaminants from surface runoff.

CONDITIONS WHERE PRACTICE APPLIES

All streams and their adjoining backwaters, floodplains, associated wetlands, and riparian areas where geomorphic conditions or habitat deficiencies limit reproduction, growth, survival and diversity of aquatic species.

Design of in-stream structures should be compatible with the dynamic nature of streams and rivers, encourage natural geomorphic recovery when possible and minimize disruption of recreational and other traditional uses of the stream corridor.

CRITERIA

Planned stream habitat improvements will

- address the aquatic species and life history stages for which the stream is being managed,
- be based on a site-specific assessment of local hydrology, channel morphology, geomorphic setting, aquatic species, riparian and floodplain conditions, and any habitat limitations including water quantity and quality, food supply, and restriction of upstream and downstream movement of aquatic species using the NRCS

Designs of structures shall conform to the following principles:

1. Structures installed shall be compatible with improvements planned or being carried out by others.
2. The channel grade must be relatively stable before any permanent type of structure can be considered feasible, unless the structure can be safely and economically constructed to a depth below the anticipated lowest depth of streambed migration.

3. The feasibility of removing woody debris or other materials (e.g. trash, abandoned structures, sediment bars, in-stream live vegetation) from the channel or adjacent riparian area that potentially or actually threaten bank or bed stability or habitat quality should be evaluated as allowed by permitting agencies.
4. Any changes in channel alignment shall be considered only after an evaluation of the effect on the stream's hydraulic and geomorphic characteristics, adjacent land use, local water rights, existing structures, and fish and wildlife habitat.
5. Any structural measures included as part of this practice must be effective for the design flow, must not require continual maintenance in order to properly function, and must be able to withstand the energies associated with moderately high flows without failing and/or causing significant degradation of the aquatic or riparian-wetland habitat.
6. Vegetative measures installed as part of this practice shall include ecologically suitable species harvested from local sources wherever practicable.

Design criteria for individual components shall be according to the Practice Standard for the individual practice.

Structures installed for the purposes of this standard will not

- impede or prevent passage of desired fish and other aquatic organisms during key stages of their life cycle;
- cause excessive bank erosion;
- cause excessive and unintentional adjustments in channel planform, cross-section, or profile;
- hinder channel-floodplain interactions.

Where practical, enhance or restore and maintain natural stream function and habitat, including natural flow- and sediment transport regimes, natural planform adjustments such as meander migration, recruitment and storage of

large wood, and physical and ecological floodplain function.

All stream and riparian activities will occur within state and federal guidelines with regard to timing of spawning, incubation, and rearing of aquatic organisms, and breeding and nesting of terrestrial organisms.

Manage livestock to sustain a healthy stream corridor and associated habitats. Livestock shall not be allowed to adversely impact vegetative or structural measures installed as part of this practice.

CONSIDERATIONS

Any stream habitat management project is most effective when applied within the context of overall watershed conditions and with clearly defined objectives and goals. Stream habitat management provisions should be planned in relation to other land uses within the watershed that may affect stream corridors. Consider existing and future concerns within the watershed, including point and non-point source pollution, water diversions, and land management activities likely to influence stream habitat conditions.

Consider one or more of the following measures as potential means to improve aquatic and riparian-wetland habitat:

1. Incorporate stream habitat improvements into a conservation plan that addresses soil quality, nutrient management, pest management and other management practices for reducing non-point sources of pollution.
2. Provide fish passage upstream and downstream and allow movement of other aquatic species and organic matter to the extent possible and when compatible with state and federal fish management objectives (see Code 396 – Fish Passage).
3. Reduce or manage excessive runoff due to watershed development, roads, or other land-use activities.
4. Restore or protect aquatic and riparian-wetland vegetation and associated riverine wetlands.

5. Maintain adequate in-stream flows to enhance and/or sustain diverse habitats for aquatic species, especially during critical life history stages of spawning, incubation, and rearing.
6. Provide heterogeneous and complex physical habitat components consistent with the physiographic setting and important to aquatic species in the watershed. These include suitable spawning substrates, structural elements such as boulders and/or large wood where appropriate, resting pools, overhead cover, and riparian vegetation.
7. Provide barriers to exclude aquatic nuisance species from stream habitats where prescribed by the appropriate state and federal fish management agencies.
8. Provide screens on water pumps, diversion ditches, or any area where unintentional entrapment of aquatic species is likely to occur.
9. Improve floodplain-to-channel connectivity and floodplain function for development of seasonal or permanent backwater, wetland and off-channel habitats consistent with the local climate and hydrology of the stream.
10. Maintain natural surface water and ground water interactions to the extent possible.
11. Control spread of exotic plant and animal species.
12. Manage recreational and other land use activities to minimize impacts on stream banks, riparian vegetation, and water quality.
13. Identify and manage potentially adverse impacts of wildlife on vegetative establishment and sustainability, such as deer browsing, beaver dams and tree girdling, bank burrowing by muskrats and others, and trampling.

Cultural Resources Considerations

NRCS policy is to avoid any effect to cultural resources and protect them in their original location. Determine if installation of this practice or associated practices in the plan could have an effect on cultural resources.

The National Historic Preservation Act may require consultation with the California State Historic Preservation Officer.

<http://www.nrcs.usda.gov/technical/cultural.html> is the primary website for cultural resources information. The California Environmental Handbook and the California Environmental Assessment Worksheet also provide guidance on how the NRCS must account for cultural resources. The e-Field Office Technical Guide, Section II contains general information, with Web sites for additional information.

Document any specific considerations for cultural resources in the design docket and the Practice Requirements worksheet.

Endangered Species Considerations

If during the Environmental Assessment NRCS determines that installation of this practice, along with any others proposed, will have an effect on any federal or state listed Rare, Threatened or Endangered species or their habitat, NRCS will advise the client of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the client selects one of the alternative conservation treatments for installation; or with concurrence of the client, NRCS initiates consultations concerning the listed species with the U.S. Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game.

PLANS AND SPECIFICATIONS

Plans and specifications shall be developed for each site where management and improvement actions are to be implemented and shall be in keeping with this standard (and any standards for the component practices) and shall describe the requirements for applying the practice to achieve its intended purpose.

The plan will include a detailed site description, the sequence in which improvements or management actions will be completed, a vegetation planting plan and maintenance requirements.

Specifications shall include:

- (a) Location and extent of modification of the stream reach to accomplish the planned purpose;
- (b) Riparian plant species and stocking rates if needed to accomplish the planned purpose;
- (c) Planting dates, care and handling of seed or planted materials to ensure an acceptable rate of survival;
- (d) Site protection and preparation requirements for establishment or recruitment of riparian vegetation if needed.
- (e) Irrigation requirements for establishment of riparian-wetland vegetation as needed.
- (f) Drawings to illustrate installation or implementation requirements.

OPERATION AND MAINTENANCE

A detailed operation and maintenance plan shall be developed for all applications. The plan shall provide for periodic inspection and prompt repair or modification of any structures that are found to cause excessive streambank or streambed instability. All structural measures shall be evaluated on an annual basis. Any repair actions, if needed, shall comply with state and federal guidelines for protecting spawning, incubation and rearing times of aquatic species and breeding and nesting times of terrestrial species.

REFERENCES

Bureau of Land Management. 1998. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas, TR-1737-15.

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NRCS, February 2007, National Biology Manual, <http://policy.nrcs.usda.gov/index.aspx> Manuals, Title 190 - Ecological Services, National Biology Manual

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